

XXIV SOME INDIAN SPIDERS OF THE SUB-FAMILY TETRAGNATHINAE.

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Spiders of the subfamily *Tetragnathinae* must be familiar to all field naturalists in India especially the curiously elongate species which comprise the large and widely distributed genus *Tetragnatha*, and the handsome silvery species which are among the commonest representatives of the genus *Leucauge* (= *Argyropepeira*). Both are moisture-loving genera, most abundant in the rains, and often frequenters of vegetation bordering streams and tanks, among which they spin their circular and generally more or less horizontal webs. *Leucauge* is usually diurnal and sits in its web all day; but *Tetragnatha* is more nocturnal and commonly rests by day with its legs stretched straight out in front of and behind it on a twig, leaf or blade of grass near its web—or sometimes (e.g. *T. gracilis*) on a twig which passes through the centre of the web.

Eleven other genera of the subfamily are recorded from the Oriental Region in Simon's "Historie Naturelle des Araignées," namely *Atelidea*, *Atimiosa*, *Dolichognatha*, *Dyschiriognatha*, *Eucta*, *Meta*, *Mitoscelis*, *Orsinome*, *Pachygnatta*, *Timonoe* and *Tylorida*, and of these all except *Mitoscelis* and *Tylorida* are already known from India, Burma or Ceylon. Only two of them, however, namely *Eucta* and *Orsinome*, can be dealt with in the present paper as the others are not sufficiently represented in the collection before me. This collection belongs to the Zoological Survey of India, except for a few specimens belonging to the Madras Museum and a few belonging to Mr. Srinivasa Rao.¹

Eucta closely resembles *Tetragnatha* in form and lives in similar places, often in company with it. It is distinguished from *Tetragnatha* by having the posterior end of the abdomen produced beyond the spinnerettes into a sort of tail. *Orsinome* closely resembles *Leucauge*, but is less strikingly marked with silver than are the commoner species of that genus, and can be distinguished from all by the absence of *Leucauge*'s characteristic line of hair on the outer side of the femur of the fourth leg. It spins its webs among rocks in the beds of mountain streams, and lets itself down into the torrent below when disturbed, clinging to any rock against which it may be washed and hiding there an inch or two below the surface of the water till it feels safe to return to its native element.

¹ The types of all new species described are in the collection of the Zoological Survey of India, Indian Museum, Calcutta.

Genus *Tetragnatha*, Latreille.

In spite of the strong superficial resemblance that almost all species of this genus bear to one another, especially after the loss of their colour through soaking in spirit they may readily be distinguished by the structure of the chelicerae, and in some cases by the arrangement of the eyes.

In view of the considerable number of species already described by Thorell and others from the Oriental Region and neighbouring islands, and of the wide distribution of some of them, the very high proportion (seven out of ten) of new species in the collection before me is unexpected. All three of the known species represented have a very wide range and so apparently have three of the new ones, this extending from South India or Ceylon to the Eastern Himalayas in one case, the Southern Shan States in another, and Siam in the third. Of the remaining four new species two come from Assam and Burma respectively, localities where Thorell's species would certainly have been expected; and the other two from Southern India.

In view of the ease with which the species can be distinguished and the fullness of Thorell's descriptions I can only conclude that the number of species still awaiting discovery is very large; in which connection it should be remembered that most are unattractive looking spiders of somewhat crepuscular habits and therefore likely to be neglected by any one not specially looking out for them.

Before proceeding to deal with the material before me I propose to summarise as briefly as possible what is known of the species already recorded from or not unlikely to occur in the Oriental Region. For this purpose the species have been arranged in alphabetical order.

Tetragnatha anguilla, Thorell.

Tetragnatha anguilla, Thorell, 1877, pp. 443-445.

From Kandari in Celebes. Lateral eyes almost twice as widely separated as are anterior from posterior medians.

Female. Chelicerae half as long as carapace, with an inwardly directed broad, flattened and moderately strong tooth situated on the inner side much above the fang-groove a little before the middle; first of dorsal eight and ventral seven teeth apical, second dorsal widely separated from first. Fang about half as long as basal joint, unarmed.

Male unknown.

Tetragnatha biseriata, Thorell.

Tetragnatha biseriata, Thorell, 1881, pp. 139-141.

From Amboina. Lateral eyes somewhat nearer together than medians.

Female. Chelicerae about two-thirds as long as carapace, with two small obtuse subapical tubercles. First tooth of both series

situated at base of fang and slightly separated from remaining six. First and second dorsals of equal length, remainder diminishing, second opposite fourth and fifth ventrals. Second ventral larger than first, remainder diminishing. Fang with suggestion only of external tooth near base.

Male unknown.

Tetragnatha chauliodus (Thorell).

Limoxera chauliodus, Thorell, 1890, pp. 292-295.

From Penang and Singapore. Lateral eyes nearer together than medians.

Female. Chelicerae about half as long as carapace; about eight ventral teeth of diminishing size, the second about twice as far from the first as from the third; first of dorsal sixteen teeth moderately large, situated a little behind first ventral, second opposite fifth ventral, size diminishing proximally. Fang armed with small obtuse tooth on outer side of basal bend, and long inwardly and forwardly directed tooth further on below.

Male. Chelicerae about as long as carapace. Subapical spine bifid, with tubercle in front. First of dorsal five teeth a little larger than and situated a little behind first of ventral six; second nearly twice as long, situated far behind it, about opposite fourth ventral; remaining three smaller, diminishing proximally. Fang unarmed.

Tetragnatha delumbis, Thorell.

Tetragnatha delumbis, Thorell, 1891, pp. 39-44.

From Little Nicobar. Lateral eyes somewhat less widely separated than medians.

Female. Chelicerae slender, not much shorter than carapace, armed apically with a long compressed and narrowly acuminate spine, followed on the ventral margin by a diminishing series of about ten teeth of which the first is situated near the base of the fang, the first two are large, and the first four widely separated. First five of nine dorsal teeth large and somewhat widely separated. Fang armed externally with a dorsal tooth, below in middle with two minute granules.

Male unknown.

Tetragnatha extensa (Linn.).

Aranea extensa, Linnaeus, 1761, p. 489.

Tetragnatha extensa, Blackwall, 1864, pp. 367-368, pl. xxvii, figs. 265a-h.

Tetragnatha extensa, Van Hasselt, 1882, p. 27.

A European species stated by Simon (1891, p. 722) to occur in Central and Eastern Asia and also in N. America, and briefly recorded by Van Hasselt from Padang in Sumatra. Lateral eyes not widely separated.

Female. Chelicerae with dorsal and ventral teeth more or less uniform. Fang unarmed.

Male. Chelicerae longer and slenderer than in female, with fine, prominent subapical process inflected at apex, and a short obtuse process likewise situated, penultimate tooth of dorsal surface much larger than rest. Fang unarmed.

Tetragnatha fallax, Thorell.

Tetragnatha rubriventris ♂ nec ♀ Thorell, 1878, pp. 105-108.
Tetragnatha fallax, Thorell, 1881, pp. 134-135.

From Amboina. Lateral eyes equally or somewhat less widely separated than medians.

Female. Chelicerae shorter than carapace. First four of dorsal ten teeth subequal, moderately strong and conico-acuminate, the first situated at base of fang, slightly shorter than second, not much nearer to second than second is to fourth, remainder in diminishing series. First of ventral eight small teeth minute, situated at base of fang, the next two much larger and separated both from it and from each other by a space equal to about twice their own length. Third ventral slightly behind, fourth opposite corresponding dorsals. Fang unarmed.

Male. Chelicerae with first five (or six) of about ten upper teeth and all five ventral teeth long, acuminate and subequally spaced, the first of the latter row smaller than the rest; remaining dorsal teeth in diminishing series; fifth ventral tooth opposite fifth or sixth dorsal.

Tetragnatha flagellens, van Hasselt.

T. flagellens, van Hasselt, 1882, pp. 27-28, pl. iv. fig. 11.

From Sumatra.

Female. Chelicerae about as long as carapace, armed with an acuminate subapical spine; fang-groove with only one row of teeth of which the first is widely separated from the remaining five or six. The fang is unarmed, long, bent as usual near the base, then straight for a distance about equal to the thickness of the basal joint, then bent inwards almost at right angles and straight for about two-thirds of the same distance, then abruptly bent outwards and somewhat wavy, straighter again and finely tapered distally.

Male unknown.

Tetragnatha geniculata, Karsch.

Tetragnatha geniculata, Karsch, 1892, p. 286.
Tetragnatha geniculata, Thorell, 1895, pp. 140-142; 1898, p. 326.
Tetragnatha geniculata, Pocock, 1900, p. 215.
Tetragnatha geniculata, Sherriffs, 1919, p. 231.

From Ceylon, Uran, Poona Ghats, Nilgiris, Madras beach and Tharrawady. Lateral eyes approximate.

Female. Chelicerae somewhat shorter than carapace. Each side of fang-groove with about nine teeth of which the first is rather stout and situated at the base of the fang, widely separated from the second. Fang strongly geniculate, armed with a strong tooth on the outer side of the basal bend and another below, a little further on.

Male unknown.

Tetragnatha gracilis (Stoliczka).

Meta gracilis, Stoliczka, 1869, p. 244, pl. xix, fig. 2.

Tetragnatha ceylonica, Cambridge, 1869, p. 394, pl. xiii, fig. 83.

Tetragnatha latifrons, Thorell, 1877, pp. 434-438; 1878, p. 109; 1881, p. 138.

Tetragnatha gracilis, Thorell, 1889, p. 133; 1890, p. 214; 1895, p. 140; 1898, p. 326.

Tetragnatha fronto, Thorell, 1890, pp. 214-217; 1895, p. 140.

Tetragnatha tridens, Thorell, 1898, pp. 328-330.

Tetragnatha gracilis, Pocock, 1900, pp. 214-215.

Tetragnatha gracilis, Sherriffs, 1919, p. 231.

Tetragnatha gracilis, Gravely, 1921, p. 411.

From India and Ceylon to Celebes and Amboina. Differing from all other known Oriental species in having the anterior median eyes much nearer together than the posterior medians. The characters in which *T. fronto*, Thorell, differs do not appear to be constant (see below, p. 437) and Thorell's description of *T. tridens* agrees perfectly with the male of the present species.

Tetragnatha gracillima (Thorell).

Limoxera gracillima, Thorell, 1890, pp. 227-230.

From Sumatra. Lateral eyes very slightly nearer together than medians.

Female. Chelicerae less than half as long as carapace. First of dorsal five teeth stouter but not longer than second, remainder diminishing; second widely separated from first, being opposite the fourth of the five ventrals all of which are small, first twice as long as second and narrowly separated from it. Fang scarcely half as long as basal joint, unarmed.

Male unknown.

Tetragnatha hamata, Thorell.

Tetragnatha hamata, Thorell, 1898, pp. 326-328.

From Carennee.

Female unknown.

Male. Chelicerae a little shorter than carapace. Subapical spine acuminate but obliquely truncate and subemarginate at apex, with two strong teeth below and to the outer side of it. The ventral series consists of these two teeth and a diminishing series of about seven more, which commences some distance behind them. The dorsal series commences with two or three small teeth situated obliquely and close to the base of the fang, and very close to each

other, and to a large conical tooth which follows them ; separated from these by a considerable distance is a diminishing series of six medium sized teeth.

Tetragnatha hasseltii, Thorell.

Tetragnatha hasseltii, Thorell, 1890, pp. 217-221.

do. var. *birmanica*, Thorell, 1895, pp. 142-143; 1898, p. 326.

? *Tetragnatha hasseltii*, var. *birmanica*,¹ Sheriffs, 1919, p. 231.

Typical form from Celebes, variety from Tharrawady, Bhamo. Lateral eyes nearer together than medians. Abdomen relatively short and stout.

Female. Chelicerae as long as carapace. Dorsal row of ten teeth extending almost throughout their length. First dorsal tooth small and situated a little behind apex, widely separated from large second tooth ; second, third and fourth about equal, somewhat widely separated ; remainder diminishing. Ventral row somewhat shorter than dorsal, with nine teeth ; first long and somewhat sinuous, situated close to base of fang, second a little smaller, situated opposite and somewhat larger than second dorsal, remainder diminishing. Varietal form with teeth on either side of fang-groove smaller than in typical form and less space between the first and second teeth, especially in the ventral row, the second ventral tooth thus being in front of, instead of opposite the second dorsal. Fang unarmed in both forms.

Male known in varietal form only. Chelicerae slenderer than in female. Subapical spine slender and curved. First of dorsal seven teeth stouter than the rest and somewhat curved, nearer to second than are other dorsal teeth to each other. First of about ten ventral teeth small and nearer to second than second is to third. First tooth of both rows situated at base of fang, the dorsal slightly behind the ventral.

Tetragnatha irridescent, Stoliczka.

Tetragnatha irridescent, Stoliczka, 1869, pp. 246-247, pl. xviii, figs. 3-3b.

From the neighbourhood of Calcutta. Relatively short spiders having the general build of *T. hasseltii* and *T. mackenziei*. The two rows of eyes more or less parallel ; laterals widely separated. The types of this species, both male and female, are immature as is clearly shown in Stoliczka's figure of the male palpal organ, though his description of it seems to imply maturity. Until mature specimens are obtained from the same locality it will be impossible to define the species.

In the collection before me there are two mature males and one possibly mature female, as well as several immature specimens,

¹ I suspect that the specimens recorded by Sheriffs from the Madras beach are really *T. mackenziei*, a species of similar form described below (p. 438) of which I have specimens from Villivaukam on the outskirts of Madras.

any of which may belong to this species. But as the two males clearly belong to two species it is obviously impossible to identify any of them till the identity of *T. irridescent* is settled.

The genital operculum is little if at all produced backwards between the spiracles, which suggests that these species may not belong to the genus *Tetragnatha* at all; but the material at my disposal does not justify a definite pronouncement on this point.

Tetragnatha jejuna (Thorell).

Limoxera jejuna, Thorell, 1890c, pp. 5-7; 1897, p. 5; 1898, p. 330.

From Malewoon in Burma. Lateral eyes nearer together than medians.

Female unknown.

Male. Chelicerae slender, longer than carapace, with small tubercle at base of bifid subapical spine. First two of dorsal nine teeth large and curved, the second twice as long as the first, situated near together and much higher on the outer side than are the others. Third dorsal tooth small, twice as far from second as second is from first and still further from fourth which is longest, remainder in diminishing series. First of ventral eight teeth stout and long, situated at base of fang; second and third small, situated near third dorsal; remainder smaller, fifth situated opposite third dorsal; first ventral and third dorsal joined by an oblique ridge. Fang long, unarmed.

Tetragnatha lineata (Thorell).

Limoxera lineata, Thorell, 1890, pp. 224-227.

From Tjibodas. Lateral eyes nearer together than medians.

Female. Chelicerae between a third and a half as long as carapace; first of dorsal five moderate-sized teeth scarcely twice as far from second as second is from third; ventral series consisting of only two or three teeth. Fang unarmed.

Male unknown.

Tetragnatha mandibulata, Walckenaer.

Tetragnatha mandibulata, Walckenaer, 1837, p. 211.

Tetragnatha minax, Blackwall, 1877, p. 20, pl. ii, fig. 14.

Tetragnatha minatoria, Simon, 1877, pp. 83-84.

Tetragnatha leptognatha, Thorell, 1877, p. 441; 1878, pp. 109-111; 1881, p. 138.

Tetragnatha minatoria, nec mandibulata, Thorell, 1890, p. 221.

Tetragnatha minax, Simon, 1893, p. 206.

Tetragnatha mandibulata, Thorell, 1895, pp. 139-140; 1898, p. 326.

Tetragnatha mandibulata, Pocock, 1900, p. 215, text-fig. 67.

Tetragnatha mandibulata, Hirst, 1911, pp. 384-385.

Tetragnatha mandibulata, Sherriffs, 1919, p. 231.

Tetragnatha mandibulata, Gravely, 1921, p. 411.¹

¹ Sherriffs' "Tetragnatha sp." in which each mandible has at its junction with the fang a large spine projecting straight in front, being in addition the

Recorded from an area extending from Mauritius and the Seychelles to the Sandwich Islands. Lateral eyes approximate.

Female. Chelicerae very long, with three very large spines close together at the commencement of the ventral row, of which the first extends directly forwards beside the base of the fang, these three teeth followed by about nine others of which the second is the largest and widely separated from those on either side of it. Dorsal row commencing with two moderately large teeth situated close together, the first being at the base of the fang and smaller than the second; the third tooth is situated much further back, about opposite the fourth ventral, the fourth opposite the fifth and the fifth a little behind the sixth; this fifth tooth is the first of a series of about six teeth situated close together making a total of ten teeth in the dorsal row. Fang somewhat as in *T. geniculata* but less strongly geniculate and with the teeth much smaller or almost rudimentary.

Male. Chelicerae very long, with acuminate subapical spine. Dorsal row of about ten teeth commencing with a very large tooth at the base of the fang, closely followed by a much smaller one and then at wider intervals by a diminishing series of about eight, of which the first is somewhat longer but narrower than the one preceding it (i.e. the second of the whole dorsal row). Ventral row of about thirteen teeth commencing with two rather small ones at base of fang, followed after an interval by four larger ones and then by a diminishing series of about seven very small ones. Fang unarmed.

Tetragnatha marginata (Thorell).

Limoxera marginata, Thorell, 1890, pp. 230-232, 1895, p. 146.

From Mt. Singalang in Sumatra and Tonghoo in Burma. Lateral eyes almost as widely separated as medians.

Female. Chelicerae about half as long as carapace. Upper row of five, ventral of four or five teeth, space between first and second teeth of upper row not very great. Fang evenly curved, scarcely half as long as basal joint.

Male unknown.

Tetragnatha maxillosa, Thorell.

Tetragnatha mandibulata, Thorell, 1890, pp. 221-223.

Tetragnatha maxillosa, Thorell, 1895, pp. 139-140, 1898, p. 326.

From Java, Singapore and Moulmein. Closely allied to *T. mandibulata*. Lateral eyes almost as widely separated as medians.

Female. Chelicerae a little shorter than carapace. First of dorsal five teeth long and thick, situated at base of fang, apex pointed and a little curved; second tooth widely separated from it, somewhat longer and slenderer, remainder diminishing both in size and distance from each other. First of ventral nine teeth at

commonest species he knew, must I think be *T. mandibulata*, which leads me to suppose that the species he calls *T. mandibulata* must in reality be something else.

right angles to fang-groove, and situated a little behind first dorsal, intermediate in size between first and second dorsals; following teeth only about half as big, series diminishing proximally. Fang unarmed, about two-thirds as long as basal joint.

Male. Chelicerae slender, with granule in front of subapical spine which is lightly bifid. First tooth of dorsal series moderately large, situated opposite first two ventrals; second about twice as long as first, widely separated both from it and from third, about opposite fifth ventral; remainder in diminishing series. First two of ventral fourteen teeth moderately small, situated close together, the smaller a little above and in front of the larger, widely separated from the remaining teeth (about twelve) which are rather small and close together.

Tetragnatha modesta, Hirst.

Tetragnatha modesta, Hirst, 1911, p. 385, text-fig. 2.

From Silhouette and Mahé in the Seychelles. Space separating lateral eyes greater than diameter of posterior laterals.

Female closely allied to *T. geniculata*, but fang not geniculate and with both teeth situated nearer the base. Male unknown.

Tetragnatha nepaeformis, Doleschall.

Tetragnatha nepaeformis, Doleschall, 1859, p. 46, pl. xvi, figs. 1-16.

From Buitenzorg. Lateral eyes somewhat nearer to each other than are medians.

Female. Chelicerae with teeth on margin of fang-groove small; fang unarmed.

Tetragnatha parvula, Thorell.

Tetragnatha parvula, Thorell, 1891, pp. 41-44.

From Kamorta. Lateral eyes nearer together than medians.

Female. Chelicerae half as long as carapace. First tooth of both series large and situated not much behind base of fang. Ventral teeth about nine in diminishing series, dorsal teeth fewer, first and second equal, nearly twice as far apart as second and third, remainder in diminishing series. Fang short, unarmed.

Male. Chelicerae little shorter than carapace, slender, with curved subapical spine, stout at base, equally bifid distally. First of eight dorsal teeth stout and long, further from still longer second tooth than from base of fang; second dorsal opposite fifth ventral, twice as long as third but nearer to it than to first; remainder in diminishing series. First of ventral nine teeth stout and situated below remainder a little behind base of fang, a little in front of first dorsal, twice as far from second as remainder are from one another. Fang shorter than basal joint, slender, unarmed.

Tetragnatha puella, Thorell.

Tetragnatha puella, Thorell, 1895, pp. 143-146.

From Tharrawady. Lateral eyes about as widely separated as medians; abdomen unusually short, in female narrowly ovate, in male cylindrical.

Female. Chelicerae half as long as carapace; fang-groove armed on each side with five or six teeth in descending series. Fang about half as long as basal joint, unarmed.

Male. Chelicerae not much shorter than carapace. Subapical spine strong, curved and simply pointed, with a small obtuse tooth a little in front of and above it at base. First of dorsal seven teeth moderately large, situated at base of fang, and widely separated from second which is small and situated opposite the third or fourth ventral, third dorsal slightly larger than second and more widely separated from it than from fourth; remainder in diminishing series. First of ventral six teeth large and stout, armed with a minute denticle on its front margin, situated well below but not much behind base of fang; remaining five of medium size, subequally spaced and situated more on the inner side of the joint. Fang a little shorter than basal joint; armed with a small external tooth at base, raised into an obsolete tubercle on inner side between middle and base.

Tetragnatha pulchella, Thorell.

Tetragnatha pulchella, Thorell, 1877, pp. 438-441; 1890, p. 217.

From Celebes and Sumatra. Lateral eyes nearer together than medians.

Female. Chelicerae about three quarters as long as carapace. First three of dorsal ten teeth widely separated. First tooth of ventral seven situated well back from apex, half way between first two dorsals, the next two between the second and third dorsals. Fang long, unarmed.

Male. Chelicerae as long as carapace, with acuminate and slightly curved subapical spine; eight dorsal and seven ventral teeth, of which the first dorsal is the largest. Fang rather short, with an obtuse tooth or tubercle on inner side near base.

Tetragnatha rubriventris, Doleschall.

Tetragnatha rubriventris, Doleschall, 1857, p. 410.

Tetragnatha lupata, Koch, 1872, pp. 170 and 178, pl. xv, figs. 2-2c.

Tetragnatha rubriventris ♀, nec ♂, Thorell, 1878, pp. 105-108.

Tetragnatha rubriventris, Thorell, 1881, pp. 131-134.

From Amboina. Lateral eyes more widely separated than are medians.

Female. Chelicerae as long as carapace or nearly so. First of dorsal eleven or twelve teeth very long and thick, situated

about half its own length from base of fang; second dorsal about half as long as first and twice as far from first as from third; space between third and fourth nearly as great as between second and third, and about twice that separating remaining diminishing series. First of ventral twelve or thirteen teeth situated not far from base of fang, much shorter than first dorsal but much stouter than four following ventrals, which are subequal; space separating first and second ventrals about twice as great as the two following spaces; remainder in diminishing series. Third ventral situated slightly behind second dorsal. Fang shorter than basal joint, unarmed.

Male. Chelicerae longer than carapace, with inwardly curved and simply pointed subapical spine. At base of fang on inner side above, a strong acuminate tooth at right angles to chelicerae above and a little in front of first dorsal and of about equal size with it; behind this another tooth about twice as large, strongly curved forwards, above and a little behind second dorsal. First six (about) of dorsal ten teeth about equal in size and spacing, except that the first two are somewhat nearer together than the rest; posterior teeth in diminishing series. First of ventral diminishing series of six teeth as large as and situated slightly in front of first dorsal; space between first and second about half as great as subequal spaces between second and fifth; space between fifth and sixth much less. Second ventral situated between second and third dorsals. Fang unarmed.

Tetragnatha serra, Doleschall.

Tetragnatha serra, Doleschall, 1857, p. 409; 1859, pl. viii, fig. 5.
Tetragnatha serra, Thorell, 1878, pp. 111-115, 1881, p. 139.

From Amboina. Lateral eyes much closer together than medians.

Female. Chelicerae about as long as carapace, with a low obtuse tubercle on inner side near base below; a small tooth at its base on outer side; a subcylindrical, abruptly acuminate and subobtuse tooth at its apex on lower side. First of dorsal nine teeth strong and subsinuate, situated at base of fang. Second dorsal not much longer and scarcely stouter than first, twice as long as third, between twice and three times as far from first as from third; third nearly twice as far from second as from fourth, and opposite fifth or sixth ventrals. First six of ventral twelve teeth of about equal size and almost equally spaced, the remainder in diminishing series. Fang much as in *T. geniculata*.

Male. Chelicerae more slender than in female, with long strongly curved and simply acuminate dorsal subapical spine, also a small subapical ventral tooth, situated in front of the ventral series. First of nine dorsal teeth moderately long, slightly sinuate, directed forwards and inwards; second slightly longer but less strong than first and scarcely half as far from it as from third, though further than third is from fourth; remainder in diminishing series. First

of thirteen ventral teeth opposite and about equal to first dorsal; next four or five less than half as large as, and about as far from, first as from each other; remainder in diminishing series; seventh ventral about opposite third dorsal. Fang unarmed.

Tetragnatha tonkina, Simon.

Tetragnatha tonkina, Simon, 1909, p. 102.

From Phu-lang-Thuong.

Female unknown.

Male. Chelicerae shorter than carapace, with curved, slender and acutely pointed subapical spine. First dorsal tooth shorter but broader at base than subapical spine, curved and subacute distally; second dorsal long, straight and acute, situated a little in front of the middle and followed by four small teeth in the basal half. First ventral tooth moderately strong, perpendicular and lightly sinuate, the remaining five or six small, the first of them isolated, the rest crowded.

Tetragnatha trichodes, Thorell.

Tetragnatha trichodes, Thorell, 1878, pp. 115-118; 1881, p. 141.
Limoxera trichodes, Thorell, 1890, p. 224.

From Amboina. Lateral eyes nearer together than are medians.

Female. Chelicerae three-fifths as long as carapace, with a small tooth near base of fang below. Teeth of fang-groove subequal in size, dorsal about seven and ventral about eight in number. First four dorsals larger than rest, the first a little shorter but stronger than the second, situated at base of fang and about four times as far from second as second is from third. First ventral about twice its own length from base of fang, much farther than from second tooth which is still nearer the smaller third; remainder minute and crowded; second dorsal opposite third ventral. Fang unarmed.

Male. Chelicerae with stout and strongly curved acuminate and unequally bifid subapical spine, with a small tooth between it and the apex almost opposite the first tooth of the dorsal series which, like that of the ventral series, is situated not far from the base of the fang. Dorsal teeth six to eight in number, ventral five to nine. First dorsal tooth small, second longest of all and nearly three times as far from first as from third; remainder in diminishing series. First and second ventrals moderately large and twice as far apart as are the smaller and diminishing remainder. Second dorsal opposite third ventral. Fang unarmed.

Tetragnatha viridorufa, Gravely.

Tetragnatha viridorufa, Gravely, 1921, p. 411.

From Barkuda Island in the Chilka Lake. Lateral eyes approximate.

Female. Chelicerae very long and widely divergent in both sexes. First tooth of ventral row much the largest, two or three times as large as first tooth of dorsal row, which is not situated so close to the base of the fang; a semicircular depression between them. The second tooth of both rows very small, followed at rather long intervals by about five others of increasing size to near the base from where the remaining seven decrease in size and are more crowded. Fang unarmed.

Male. Subapical spine long and slender. First tooth of dorsal row slightly shorter and stouter than subapical spine; the second much smaller, the third smaller than the fourth; the first five widely spaced, the last six close together at the base. Ventral row of about eight spines shorter than dorsal, the third and the last two much smaller than rest. Fang with strong truncate tubercle on inner side of bend just above base.

The above diagnoses were drawn up in the first instance from published descriptions for my own convenience in dealing with the material before me. They have when possible and desirable been modified in the light of this material and have been placed on record here as a guide to others working on the group.

The species which I have myself been able to examine may be distinguished as follows:—

1	Ocular quadrangle very much narrower in front than behind (fig. 1a)	T. gracilis, p. 436.
	Ocular quadrangle little or no narrower in front than behind	2.
2	Lateral eyes somewhat more widely separated than medians (fig. 1g,) ¹	3.
	Lateral eyes not more widely separated than medians, usually more or less closely approximate or contiguous (fig. 1d) ...	4.
3	Abdomen much less slender than is usual in the genus, only about four times as long as broad, with more or less rounded sides; anterior and posterior rows of eyes slightly recurved, anterior laterals minute (fig. 1g)	
	Abdomen slender, parallel-sided; anterior and posterior rows of eyes strongly recurved, anterior laterals small ...	T. mackenziei, p. 438.
4	Females	T. moultmeinensis, p. 439.
	Males	5. II.
5	Fang with a more or less distinct tooth situated ventrally on outer side of basal bend (figs. 2a, b and d)	6.
	Fang without any tooth in this position ...	8.
6	Fang unarmed except for above-mentioned tooth; first two teeth of ventral row situated at base of fang and not markedly larger than others (fig. 3a)	
	Fang armed on inner side with a strong tooth about a third of the way from base to tip (fig. 3b) or first ventral tooth (or teeth) very large (figs. 3c-d)	T. fletcheri, p. 440. 7.

¹ T. irridescentis, Stoliczka, belongs to this group if it is a true *Tetragnatha*, but its full characters have not been determined (see above, p. 428).

7	First ventral tooth small like others, directed inwards; fang strongly geniculate with teeth very well developed	<i>T. geniculata</i> , p. 441.
	First ventral tooth very large, directed forwards below fang which is slightly geniculate with fully developed teeth ...	<i>T. mandibulata</i> , p. 441.
8	Fang much swollen towards the middle, where it is armed dorsally with a stout and more or less rectangular tooth (fig. 4a); abdomen very slender	<i>T. cochinensis</i> , p. 442.
	Fang unarmed; abdomen stouter ...	9.
9	Fang very stout in the basal half, then very slender; first dorsal tooth broad and obliquely truncate (fig. 4c) ...	<i>T. listeri</i> , p. 443.
	Fang more evenly tapering; first dorsal tooth acuminate	10.
10	Chelicerae stout, first two ventral teeth very large, first two dorsals very small (fig. 5a)	<i>T. sutherlandi</i> , p. 444.
	Chelicerae very long and slender; first tooth of both dorsal and ventral rows much larger than second (fig. 6a) ...	<i>T. viridorufa</i> , p. 445.
11	First dorsal tooth triangular, wide at base, simply pointed at apex, much larger than any other tooth of either dorsal or ventral row no tooth on inner side of basal curve of fang (fig. 3e)	<i>T. geniculata</i> , p. 441.
	First dorsal tooth not the largest; or a strong tooth on inner side of basal curve of fang	<i>T. mandibulata</i> , p. 441.
12	First dorsal tooth not larger than second, sometimes much smaller; at most a rounded swelling on inner side of basal curve of fang (figs. 4b and d)	12.
	First dorsal tooth much larger than second; a strong tooth, truncate distally, present on inner side of basal curve of fang (figs. 5b and 6b)	13.
13	First dorsal tooth much smaller than second; subapical spine very slender distally, truncate at apex (fig. 4b)	14.
	First dorsal tooth about equal in size to second; subapical spine broader distally, more or less bifid at apex (fig. 4d) ...	<i>T. cochinensis</i> , p. 442.
14	Subapical spine short and stout; first dorsal tooth acuminate, slightly smaller than second ventral (fig. 5b)	<i>T. listeri</i> , p. 443.
	Subapical spine long and slender, first dorsal tooth almost equally long, but stouter; second ventral tooth small (fig. 6b) ...	<i>T. sutherlandi</i> , p. 444.
		<i>T. viridorufa</i> , p. 445.

Tetragnatha gracilis (Stoliczka)

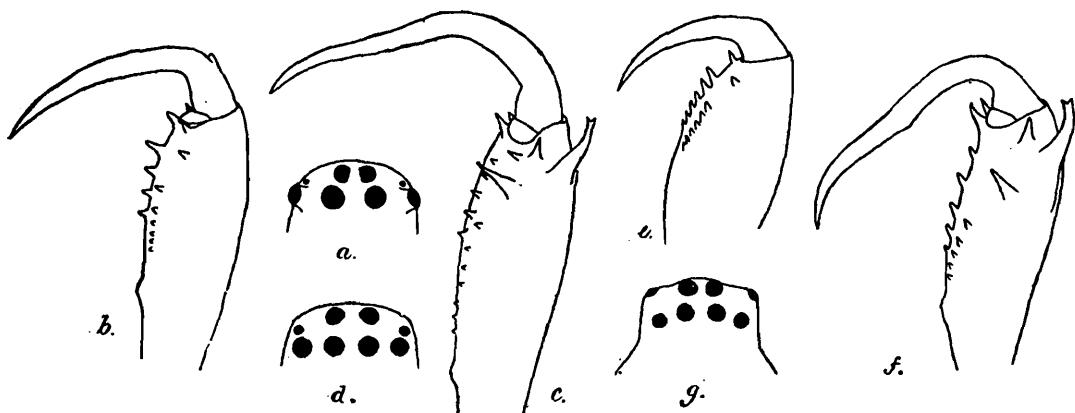
Figs. 1a-c.

Localities.—Parambikulam, 1700–3200 ft., Cochin State; Bangalore, ca. 3000 ft., S. India; Taloshi, ca. 2000 ft., Koyna Valley, Satara District, Bombay Presidency; Bandipur, ca. 3000 ft., Mysore; Villivaukam, Chingleput Dist. and Barkuda Island, Chilka Lake, Ganjam Dist., Madras Presidency; Bhubaneswar, Puri Dist., Orissa; Port Canning, Calcutta and Madhupur, Bengal; Pusa, Bihar; Kalimpong, 2000–4500 ft., Darjiling District.

This species differs from most in that it commonly (but not

invariably) spins its web on either side of a twig, which thus comes to extend across one diameter of it, and uses the part of the twig that crosses the centre of the web as its resting place.

It differs from all other oriental species of the genus in having the anterior median eyes much smaller and closer together than the posterior medians; and in the female the chelicerae do not become very prominent even in adult specimens. The posterior lateral eyes are very prominent, and the anterior laterals very small. In the female the dorsal margin of the fang-groove bears a row of about eight teeth in descending order of magnitude, of which the first is situated at the base of the fang, the second is situated some distance behind it and at a greater distance from the ventral margin, the third somewhat further from the second than the second is from the first, but nearer to the ventral margin than is the second, the rest being somewhat close



TEXT FIG. I.

- a.—*Tetragnatha gracilis* ♀ eyes from above.
- b.— " " ♀ chelicera from above.
- c.— " " ♂,
- d.—*Tetragnatha mandibulata* ♀, eyes " from "
- e.—*Tetragnatha mackenziei* ♀, chelicera from above.
- f.— " " ♂,
- g.— " " ♀, eyes " from "

together. The ventral margin bears about six teeth, of which the second is situated further from the first than from the third and is commonly the largest. Above the first tooth there is usually a smaller tooth, likewise situated at the base of the fang; and the fang itself usually bears a distinct tooth on the outer side just above the base. Either or both of these last mentioned two teeth may, however, be absent; and the former of them may be larger than the first tooth of the ventral series, especially when the tooth on the fang is absent. It is to this form that Thorell has applied the name *fronto*. In view of the variability of these teeth, however, I think that *fronto* should be merged in *gracilis*. The fang is somewhat short and thick, abruptly curved close to the base, then lightly curved, not geniculate.

The chelicerae of the male are much longer and slenderer than are those of the female. The subapical spine is long and

slender, lightly curved, and imperfectly bifid distally; below and in front of it is a smaller conical spine directed forwards, and below this again and slightly behind it, about opposite the base of the subapical spine, is the first of the dorsal row of about seven small teeth, arranged in descending series with a very long gap between the first and second. Above the middle of this gap is a pointed inwardly directed spine somewhat variable in length but always well developed and, when large, often slightly geniculate. The ventral margin of the fang-groove bears a pair of teeth at the base of the fang, of which the second is the longest, followed after a short interval by a somewhat uniform series of about six teeth, all small, the middle of the interval being about opposite the first dorsal tooth.

Tetragnatha mackenziei, sp. nov.

Figs. 1e-g.

Localities.—Kulattupuzha, W base of W Ghats, Travancore; Mahabaleshwar, 4200 ft., Satara Dist.; Seringapatam, ca. 2500 ft. and Bangalore, ca. 3000 ft., Mysore, Villivaukam, Chingleput Dist.; Barkul, Orissa; Pachmarhi, 3300–3500 ft. and Hoshangabad, Central Provinces; Siripur, Saran, Bihar; Calcutta; edge of Inlè Lake, Fort Stedman, Yawngiwe State, S. Shan States. Type (female) from Salt Lakes near Calcutta.

Total length up to about 9 mm. (chelicerae excluded); length of carapace about 3 mm., maximum width of same fully 2 mm. in female, barely 2 mm. in male. The carapace and legs are yellowish, the abdomen greyish. The carapace is moderately narrow and almost parallel-sided in front, broadly rounded further back, relatively longer and narrower in the male than in the female. The abdomen is comparatively stout, as in *T. puella*, and much shorter and more rounded than is usual in the genus, being scarcely more than four times as long as it is thick.

The ocular quadrangle is practically square, but the posterior medians are separated by a very slightly wider space than the anterior medians, and are fully one and a half times as far from the anterior laterals as from each other. The anterior laterals are very small, and about equidistant from the anterior medians and posterior laterals, which latter are somewhat nearer to the posterior medians than these are to each other.

The chelicerae of the female are short and stout, between two and three times as long as they are thick and about two-thirds as long as the carapace. There are about seven teeth in each row, the first in each (occasionally the first two ventrals) somewhat widely separated from the rest, which are in diminishing series. First dorsal larger than second, situated behind base of fang. First ventral smaller than second, situated at base of fang. Second dorsal about opposite fourth ventral. Fang short and stout, unarmed.

The chelicerae of the male are much longer than those of the female and nearly as long as the carapace. The subapical spine is

broad at base, slender and slightly bifid distally. A stout conical tooth is situated just below its base and another some distance further back, much as in *T. gracilis* but of more nearly equal size. The dorsal series of teeth contains about five only, all minute, situated much further back, the first of them being about opposite the fifth and sixth ventrals. The first two ventrals are situated close together at the base of the fang, the second larger than the first and nearly as large as the two large conical teeth on the dorsal surface; the remaining five are subequal, both in size and spacing, except the last one or two which are smaller than the rest but little if any closer.

It is possible that this may prove to be only a subspecies of *T. puella* from Tharrawady, from which it is distinguished chiefly by having a bifid subapical spine in the male instead of an acuminate one. The only Burmese specimen I have seen is a female; but its eyes are as shown in fig. 1g with the laterals much more widely separated than the medians instead of equally so.

Tetragnatha moulmeinensis, sp. nov.

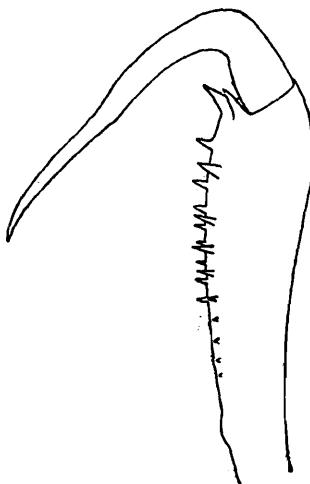
Fig. 2.

Locality.—Moulmein, a single female.

Much longer and slenderer than *T. mackenziei*, with long divaricate chelicerae. Total length about 12 mm., carapace about 3 mm.

The carapace is more strongly rounded in front than in *T. mackenziei*, and the two rows of eyes are more strongly curved in consequence. The ocular quadrangle is slightly wider in front than behind and slightly longer than wide. The posterior eyes are of about equal size and about equally distant (a little more than a diameter) from each other. The anterior eyes are widely separated from them, the small laterals even more so than the large medians.

The chelicerae are about as long as the carapace, with a minute denticle on a low obtuse swelling on the outer side below. The first dorsal tooth is slightly smaller than the first ventral; both these teeth are situated at the base of the fang and are followed after an interval, which is longer in the dorsal row than in the ventral, by other teeth in descending series, those of the dorsal row being larger than those of the ventral and also extending further back. The fang is simple and unarmed.



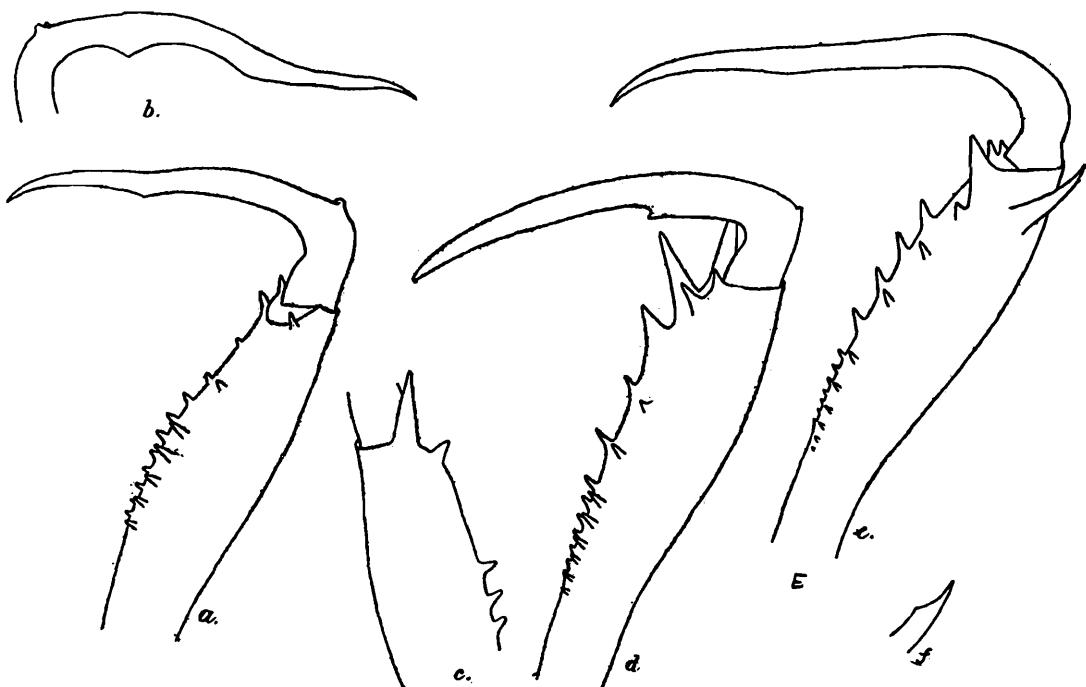
TEXT-FIG. 2.
Tetragnatha moulmeinensis ♀
chelicera from above.

This species seems to be closely related to *T. hasseltii*, Thorell, whose chelicerae appear to be somewhat variable, but is distinguished from it by having the lateral eyes more instead of less widely separated than the medians and by its longer and more slender abdomen.

***Tetragnatha fletcheri*, sp. nov.**

Fig. 3a.

Locality,—Shillong. Four females collected by Mr. T. Bainbridge Fletcher and Mr. R. Senior White. Maximum length 11 mm., carapace $3\frac{1}{2}$ mm.



TEXT-FIG. 3.

- a.—*Tetragnatha fletcheri* ♀, chelicera from above.
- b.—*Tetragnatha geniculata* ♀, fang seen obliquely from in front below.
- c.—*Tetragnatha mandibulata* var. *bidentata* ♀, anterior ventral teeth of fang-groove.
- d.—*Tetragnatha mandibulata*, s. str. ♀, chelicera from above.
- e.—*Tetragnatha mandibulata*, s. str. ♂, chelicera from above.
- f.—*Tetragnatha mandibulata* var. *bidentata* ♂, subapical spine.

The anterior and posterior rows of eyes are very slightly recurved and as a rule approximately parallel, but the laterals appear almost contiguous in some specimens. The anterior laterals are somewhat smaller than the rest, the anterior medians may be slightly smaller than the posterior medians. The ocular quadrangle is very slightly narrower in front than behind and about as long as it is wide behind.

The chelicerae are nearly as long as the carapace and strongly divaricate. None of the teeth are very large. The first dorsal is situated near the base of the fang; the second is smaller than the first and situated about twice as far from the first as from

the third, which is about equal to the first, situated a little in front of the middle of the joint, and followed by a diminishing series of four other moderately large teeth. The first two ventral teeth are situated at the base of the fang, the first of them being directed forwards at the side of it; they are about equal in size to the first dorsal, the second slightly larger than the first. The third is very small, and situated about half way to the fourth which is about opposite or slightly further back than the second dorsal. The fourth is larger than the third and is somewhat closely followed by the remaining eight, of which the first three or four are larger than it is, though smaller than the dorsals opposite them; the rest in descending series.

Tetragnatha geniculata, Karsch.

Fig. 3b.

Localities.—Peradeniya, Ceylon; Coonoor, ca. 5700–6000 ft. and Coonoor Ghat, ca. 5500 ft., Nilgiris; Mahabaleshwar, ca. 4200 ft., Satara District, Bombay Presidency; Sanjai River, Chakadhpur, Chota Nagpur; Pegu, Burma.

This species, though widely distributed, does not appear to be very common. It is now nearly thirty years since the female was first described, but the male has still to be discovered.¹

The general build of the female is very slender and the chelicerae are strongly divaricate. The dentition somewhat resembles that of *T. viridorufa* (fig. 6a). None of the teeth are specially long; the first tooth of both rows is situated at the base of the fang, and is much more widely separated from the second than are the remaining teeth from each other, especially on the dorsal side, the second dorsal being about opposite the fourth ventral. The nine dorsal teeth are larger and more widely spaced than the more numerous ventrals. Both rows extend nearly to the base of the joint. The fang is strongly geniculate with a stout tooth, often double, on the outer side of the basal bend, and another on the inner side a little further on (fig. 3b).

Tetragnatha mandibulata, Walckenaer.

Figs. 1d; 3d, e.

Localities.—

Typical form.—Nuwara Eliya, Ceylon; Ernakulam and Chalakudi, Cochin State; Bangalore, Mysore; Ootacamund, 6700–8000

¹ I have since obtained a male from Coonoor. It is hardly distinguishable from that of *T. mandibulata* except for its greyish instead of reddish yellow general colour and its almost black sternum. These differences may, however, be due to the short time that the male of *T. geniculata* has yet been in spirit, or may prove to be variable even if real. The only structural difference that I can find is that the teeth on the mandibles are slightly more numerous (one or two more in each row) and therefore set somewhat closer together in *T. geniculata* than in *T. mandibulata*; but the material now before me does not admit of any certainty that even this character is really constant.

ft., Coonoor, 5700–6000 ft. and Coonoor Ghat, *ca.* 5500 ft., Nilgiris Villivaukam and Chingleput; Chingleput District, south end of Chilka Lake, Rambha, and Barkuda Island, Chilka Lake, Ganjam District of Madras; Barkul, Chilka Lake, Puri District of Orissa; pass between Chaibassa and Chakardharpur, Singbhum District and Purulia, Manbhum District, Chota Nagpur; Gmatia, Birbhuri District, Calcutta (including Salt Lakes area), Port Canning and Barisal in Bengal, Siripur, Saran and Kierpur, Purneah District, Bihar; Bijaura, Nepal Terai, Singla, 1500 ft., and Kalimpong, Darjiling District, Tezpur, Selai Kusi in Darrang District and Sibsagar, Assam; Than-taung, Yawng'hwe State, S. Shan States, Lampam, Patalung, Siam

Var. *bidentata* (figs. 3c, f.)—Mauritius; Medha, Venna Valley, Satara District; Datar Hill nr. Junagadh, Kathiawar; Nagpur, Pachmarhi, 3500 ft., and Hoshangabad, Central Provinces; Singla, 1500 ft., and Kurseong, 3200–4700 ft., Darjiling District; opening of gorge of Heho River, *ca.* 3000 ft., Yawng'hwe State, S. Shan States.

This species is nocturnal, spinning large orb-webs at sundown among grasses and other foliage, usually beside a stream or tank, and resting by day with its legs stretched out before and behind on a blade of grass or a twig. It is readily distinguishable from others by the forwardly directed first ventral tooth of the female and by the large triangular first dorsal tooth of the male. The armature of the fang is never very strong and may be rudimentary or absent; apart from this it bears a close general resemblance to that of *T. geniculata*.

Two very distinct forms occur, the typical one and a variety which is described below under the name *bidentata*. For the most part these varieties seem to occur in different localities; but both are recorded from the Darjiling District and Southern Shan States.

T. mandibulata, s. str.—The first three ventral teeth of the female are very large and are followed without any long interval by a number of smaller ones. The subapical spine of the male is acuminate and simply pointed.

Var. *bidentata*, nov.—The first ventral tooth of the female is much the largest; it is closely followed by the second, after which there is a long interval without any teeth. The subapical spine of the male is obliquely truncate.

Tetragnatha cochinensis, sp. nov.

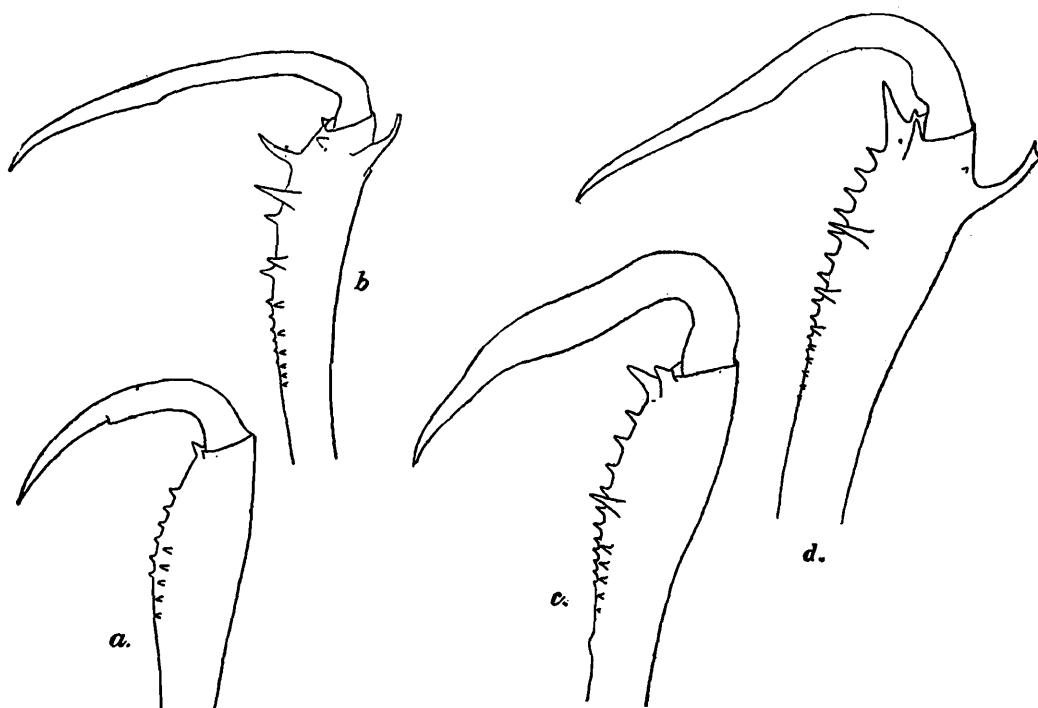
Figs. 4a, b.

Localities.—Parambikulam, 1700–3200 ft., Trichur, Chalakudi and Ernakulam, Cochin State; Bangalore, Mysore, Coonoor, 5700–6000 ft., Niigiris. Types (male and female) from Parambikulam.

A very slender species. Total length about 11 mm.; carapace about 2 mm. long, less than 1 mm. wide. The anterior margin of

the carapace and two rows of eyes are somewhat strongly recurved. The ocular quadrangle is practically square; the anterior laterals are small and are situated very near to the posterior laterals.

The chelicerae of the female are slender, but are rather small and not very strongly divaricate. All the teeth are small and the first of each row is situated at the base of the fang with the second far behind, especially dorsally, as in *T. geniculata*. The second dorsal is opposite the fifth or sixth ventral. The fang of the female is somewhat geniculate, much swollen about the middle, where it bears dorsally a stout and more or less rectangular tooth. The chelicerae of the male are longer and more strongly divaricate than are those of the female. The subapical spine is



TEXT-FIG. 4.

- a.—*Tetragnatha cochinensis* ♀, chelicera from above.
- b.—
- c.—*Tetragnatha listeri* ♂, " "
- d.—" " ♀, " "

very slender distally, with truncate apex. The first dorsal tooth is larger than the first ventral, which is minute; the latter is situated at, and the former slightly behind, the base of the fang. The second tooth of each row is much the largest, the ventral anterior to the dorsal. The remaining teeth of both rows are arranged in descending series. The fang is slender and unarmed.

Tetragnatha listeri, sp. nov.

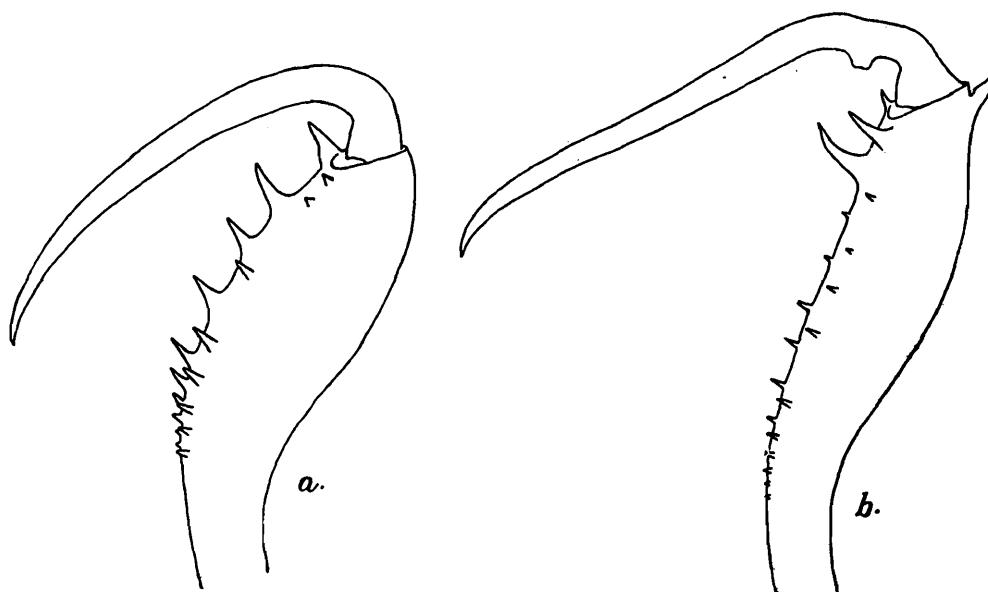
Figs. 4c, d.

Localities.—Peradeniya, Ceylon; Ernakulam and Chalakudi, Cochin State; Nara Ghat, Nepal; Singla, 1500 ft., Pashok, 3500

and 5000 ft., Kalimpong, 2000-4500 ft., Darjiling District; Chittagong; Man Ton, 4200 ft., Mongmit State, Ruby Mines District, Upper Burma, Telok Tikus, Penang; Lampam, Pata-lung and Singora, Talè Sap, Siam.

Total length of female about 11, of male about 8 mm., carapace about 2.5 mm. long by 1.5 mm. broad in both sexes. The anterior row of eyes is slightly recurved, the posterior almost straight; the ocular quadrangle is square and the small anterior lateral eyes are almost in contact with the posterior laterals.

The chelicerae are long and strongly divaricate. In the female the first dorsal tooth is broad and obliquely truncate, situated at the base of the fang, and succeeded after a long interval by the longer second tooth; the remaining four or five are in descending series. The first ventral tooth is situated slightly behind the base of the fang and is followed by three smaller ones.



TEXT-FIG. 5.
Tetragnatha sutherlandi, chelicerae from above.
 a.—Female b.—Male.

somewhat widely spaced in the interval between the first and second dorsals; the remainder are in descending series. The fang is slightly geniculate, stout near the base, slightly swollen towards the middle, very slender distally.

The chelicerae of the male bear a long slender parallel-sided sub-apical spine, bifid at apex. The dorsal teeth are not unlike those of the female, except that the first of them is simply pointed. The first two ventral teeth are situated at the base of the fang, the first being minute and the second very large, the rest small. The fang is slender and unarmed.

Tetragnatha sutherlandi, n. sp.

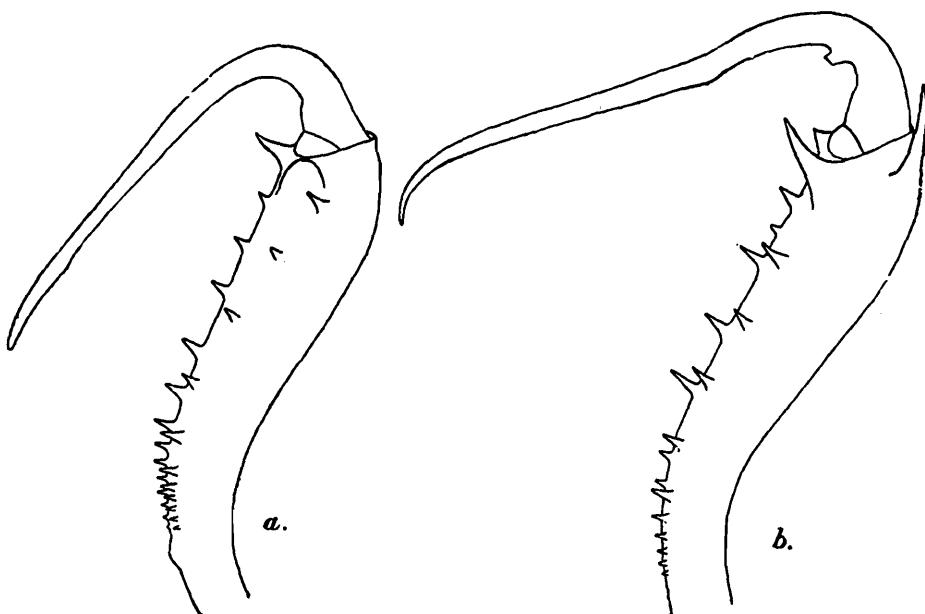
Figs. 5*a*, *b*.

Localities.—Trichur and Chalakudi, Cochin State; Siripur. Saran, Bihar; Serampore, Bengal, Kalimpong, Darjiling District,

Total length of female about 12 mm., of male about 9 mm., carapace about 3 mm. long in the female and about 2·5 in the male.

Both lines of eyes are distinctly recurved, the posterior more so than the anterior; the small anterior laterals are situated very near the posterior laterals.

The chelicerae are long and strongly divaricate in both sexes, but are much stouter in the female than in the male. In the female the first two dorsal teeth are short and stout and situated near together a little behind the base of the fang; the next two are larger and more widely separated, the remaining four in descending series. The first four ventral teeth are large and widely



TEXT-FIG. 6.
Tetragnatha viridorufa, chelicerae from above.
a.—Female b.—Male.

separated, the rest smaller, the first is situated at the base of the fang, and the first two are larger than the second two. The fang is unarmed.

The subapical spine of the male is short, broad and obliquely truncate. The first ventral tooth is minute, situated at the base of the fang; the first dorsal and second ventral are very large, situated a little further back, the former slightly in front of the latter; remaining teeth small. The fang is very long and slender with a distinct, broad, and more or less truncate tooth on the inner side of the basal bend.

Tetragnatha viridorufa, Gravely.

Fig. 6a, b.

Localities.—Ernakulam, Cochin State, Villivaukam, Chingleput District; Barkuda Island, Ganjam District and Balugaon,

Puri District, both on the Chilka Lake ; Balighai, further north in the Puri District.

Like *T. mandibulata* this species is nocturnal ; but instead of frequenting water it spins its webs among bushes in the jungle. The bright green of the sides of its abdomen tone with the reddish brown of its back and legs in such a way as to make it very inconspicuous on the leafy twigs of the bushes among which its web is spun, and where it rests by day.

In life it may readily be recognized by its bright colours and very long and strongly divaricate chelicerae ; but the characteristic colouration soon disappears in spirit. The female may, however, be recognized by a semicircular ridge that extends between the first spines of dorsal and ventral rows respectively, these spines being the largest, with the ventral much larger than the dorsal, the largest of the remaining spines are situated on the strong curve near the base of the joint instead of distally as is usual.

The male may be recognized by the fact that the first dorsal and the subapical spines are of about equal length, the former slightly shorter and thicker than the latter, and much longer than any of the other spines. The fang is armed with a strong truncate tooth on the inner side of the basal bend as in the preceding species.

Genus *Eucta*, Simon.

Three species, *E. caudicula*, Karsch (1879, pp. 66, 67, pl. i, figs. 4-4b), originally described from Japan, *E. isidis*, Simon (1880, p. 34), originally described from Egypt, and *E. javana*, Thorell (1889-90, pp. 236-239 ♂, 1895, pp. 146-147, ♀), originally described from Java are said to occur in India and Burma (see Simon, 1885, p. 450 and 1892, p. 722; Sheriffs, 1919, p. 232); and a fourth, *E. anguilla*, Thorell (1877, pp. 443-445) has been described from Celebes.

The specimens before me both male and female all agree with Thorell's description of *E. javana*, except that the teeth bordering the fang-groove of the female are somewhat variable in number and are usually slightly more numerous, as in *A. anguilla*. It seems possible, therefore, that these two species may prove to be identical ; but the male of *E. anguilla* has not yet been described.

E. caudicula is said by Sheriffs (1919, p. 232) to have been recorded by Simon from India.¹ The female differs from those of *E. anguilla* and *E. javana* in lacking the stout tubercle near the middle of the upper and inner side of the basal joint of the chelicerae. On the dorsal side of the fang-groove it has one large tooth at the base of the fang, one a little smaller at about the middle, followed by a row of about five small ones. On the ventral side there are three large teeth at the base of the fang, followed after an interval by a row of about nine small ones. The fang bears a small tubercle on the outer side just above the base,

¹ I have not, however, succeeded in tracing this record.

and is slightly constricted on the inner side at about the middle. The male appears to differ from that of *E. javana* chiefly in having the long apical tooth of the ventral row followed by about ten instead of five small teeth, this row consequently extending throughout the whole length of the joint.

E. isidis apparently also differs from *E. anguilla* and *E. javana* in the female sex, of which alone the description is known to me, in lacking the stout tubercle near the middle of the upper and inner side of the basal joint of the chelicerae, and it has only three strong teeth on the ventral margin of the fang-groove.

Eucta javana, Thorell.

Eucta javana, Thorell, 1889-90, pp. 236-239; 1895, pp. 146-147.

Localities.—Kulattupuzha at the western base of the Western Ghats in Travancore; Seringapatam, ca. 2500 ft., and Bangalore, ca. 3000 ft., Mysore; Ootacamund, ca. 6700-8000 ft., Nilgiris; Red Hills, Chingleput District and south end of Chilka Lake, Ganjam District in the Madras Presidency; Barkul and Balighai in the Puri District of Orissa, Charkardhapur, Singhbhum District in Chota Nagpur; Siripur, Saran District and Katihar and Kierpur, Purnea Dist., in Bihar, Gmatia Birbhum and Calcutta in Bengal; Bulol in Nepal; Sukna, 1000 ft., Punkabari and Kalimpong, 2000-4500 ft., in the Darjiling Dist. of the E. Himalayas; Inlè Lake, Yawngwe State, S. Shan States.

In this species, as in the various species of *Tetragnatha*, the chelicerae are relatively short in young specimens, and the characteristic dentition is not developed. This develops, however, in specimens which I think can hardly be mature; and mature or apparently mature specimens of both sexes vary greatly in size (σ , 6-10 mm., φ 12-18 mm. long, excluding chelicerae). The size and general development of the teeth on the chelicerae also varies considerably, though their arrangement is approximately constant. In the female the first tooth on either side of the fang-groove is situated at the base of the fang; in the ventral row the second tooth is about twice as far from the first as from the third and the third is as a rule (but not invariably) distinctly further from the second than from the fourth; in the dorsal row the second is opposite the third ventral, the third opposite the fourth ventral and so on. Each row consists of from about six to eight teeth, usually one or two fewer in the dorsal row than in the ventral. In addition to these teeth there is a conical denticle at about the middle of the dorsal surface on the inner side. As a rule this is very large in well-developed specimens, but sometimes it is more indistinct. It is not developed in immature specimens. In mature specimens as a rule there is also a small but strongly chitinized conical denticle on the outer side close to the apex; this is, however, less constant and is likewise absent in immature forms. The fang is unarmed and slightly curved.

In the chelicerae of the male the basal joint is armed at

about three quarters of the way to the end of the dorso-lateral margin with an upwardly directed and forwardly curved spine, which is bifid distally. The fang-groove is oblique and somewhat curved. The ventral row of teeth consists of one large tooth at the base of the fang, followed at a little distance by a row of about five others, of which the anterior is the largest. In front of the dorsal row there is usually a pair of minute denticles situated transversely at the base of the fang. The dorsal row proper begins about a third of the way down the joint with a very long tooth situated somewhat high up on the dorsal surface and followed at a little distance by a row of about five others, normally of small size, the first of these being situated about opposite the last of the ventral row. The fang is lightly geniculate. The palps of the male are slender, with the patella about two-thirds as long as the tibia, and the tibia and tarsus together about two-thirds as long as the femur.

Genus *Orsinome*, Thorell.

The following Oriental species have been recorded :—

- O. armata*, Pocock, 1901, pp. 480, 481 (male only) from Shillong in Assam.
- O. marmorea*, Pocock, 1901, pp. 479, 480, from Ootacamund in the Nilgiri Hills and Ponmudi in Travancore.
- O. phrygiana*, Simon, 1901 a, pp. 56, 57 (male only) from Bukit Besar, Jalor, Malay Peninsula.
- O. vethi* (van Hasselt) 1882, pp. 32, 33 (damaged male only) from Java.

Little has yet been recorded of the habits of this genus. The two species that are known to me, *O. marmorea* and *O. listeri*, both spin their webs among boulders in mountain streams and the former at least drops into the water beneath when disturbed, clinging to the first rock against which it is swept by the current, an inch or two below the surface, till its alarm has subsided (see Gravely, 1915, p. 537).

A male and female are sometimes found together in one web with their heads in contact.

Orsinome marmorea, Pocock.

Fig. 7a, b.

O. marmorea, Pocock, 1901, pp. 480-481.

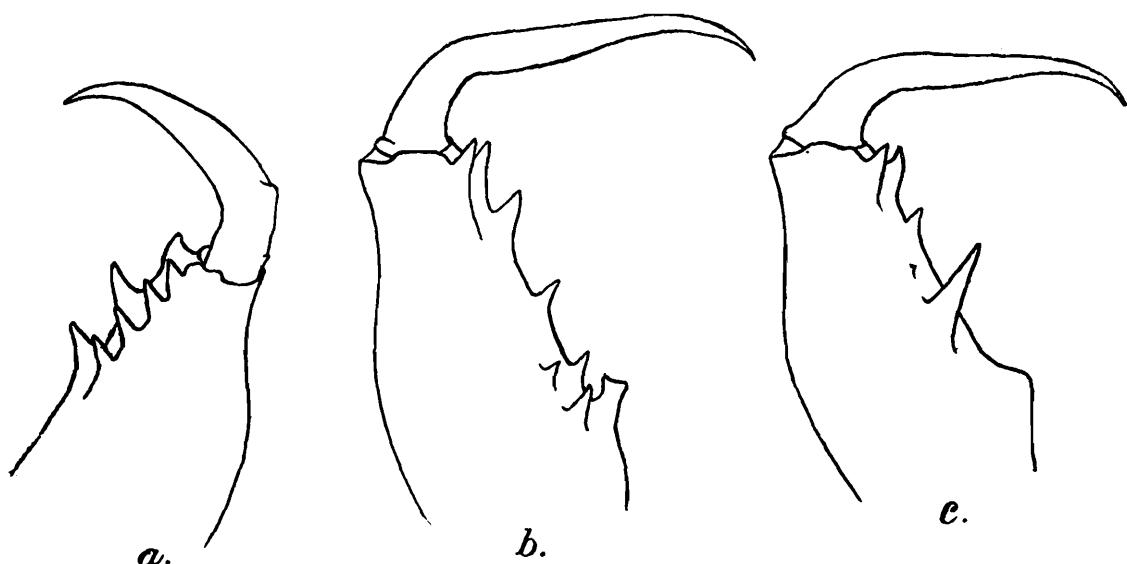
Localities.—Kavalai, 1300-3000 ft., and Forest Tramway 29-30th mile, 1600 ft., in Cochin; Talewadi near Castle Rock in N. Kanara; Coonoor, 5700-6000 ft., Nilgiri Hills, and Pachmarhi, 3000 ft., in the Satpura Hills of the Central Provinces.

Females of this species may be as much as 12 mm. long, with much more massive and rotund abdomen than the males.

The vulva of the female is a large smooth reddish brown chitinous plate, roughly circular in outline though with a slight posterior

prolongation; it is without the conspicuous anterior depression found in *O. listeri*.

The distal part of the chelicera of the female is shown in fig. 7a. The fang is very short, not more than half the length of the basal joint. The fang is longer in the male, and very slightly geniculate, otherwise similar. The ventral margin of the fang-groove of the male is armed with four acutely pointed conical teeth arranged at about equal distances from each other in descending order of magnitude and followed by a large abruptly truncate or slightly bifid tubercle. The dorsal margin bears one moderately large conical tooth at the base of the fang, i.e. opposite the first tooth of the ventral row, a very small one opposite the fourth and another moderately large one opposite the anterior margin of the truncate tubercle. The tip of the trochanter of the palp is unarmed beneath;



TEXT-FIG. 7.

- a.—*Orsinome marmorea* ♀, distal part of chelicera from below.
- b.—" " ♂, chelicera from above
- c.—*Orsinome listeri* ♂ " "

the tibia is scarcely twice as long as the patella, shorter than the tarsus, and scarcely a quarter as long as the femur—characters in which it differs, according to Pocock, from *O. armata* from Shillong.

Orsinome listeri, sp. nov.

Fig. 7c.

Localities.—Pashok, 1000 and 2500 ft., and Singla, 1500 ft., both in the Darjiling District of the E. Himalayas.

Total length of female about 10 mm.; length of carapace about 3·5 mm. Total length of male about 6 mm.; length of carapace about 2 mm. Colour, arrangement of eyes, etc., much as in *O. marmorea*, which the male further resembles in the structure and proportions of the palps and the female in the armature of the

chelicerae. The female, however, differs from that of *O. marmorea* in having the vulva neither redder nor smoother than the surrounding blackish matt integuments, and with a conspicuous longitudinal oval groove in front. The male differs in the armature of the chelicerae (see fig. 7c). There are two teeth on the ventral margin of the fang-groove, placed close together one behind the other at the base of the fang, the anterior being much larger than the posterior, and there is a large obtusely conical tubercle much nearer the base. The dorsal margin bears two widely separated teeth with a more or less obsolete denticle in front of the proximal one, much as in the male of *O. marmorea*.

Genus *Leucauge*, White.

Incl. *Argyropeira*, Emerton, and *Callinethis*, Thorell.

The following is a list of the principal descriptions of species recorded from the Oriental Region and of some of those found on its borders. Several of them have, however, already been relegated to the synonymy of common and widely distributed species (see synonymy of the species in the collections under consideration) and it is possible that others will have to follow them. On the other hand several species originally described as *Meta* or *Tetragnatha* have had to be transferred to *Leucauge*, and it is possible that others may have to follow these also, descriptions of a number of which from places bordering on the Oriental Region have been given by Thorell in his "Ragni di Celebes" (1877), "Ragni di Amboina" (1878) and "Ragni Austro-Malesi" (1881).

Argyropeira striata, Thorell (= *stellimicans* Simon, and *bigibba*, Thorell) has been made the type of a separate genus, *Tylorida*.

L. angustata (Stoliczka), 1869, pp. 241-242, pl. xx, fig. 7, ♀ from Calcutta and Sibsagar.

L. argentata (Cambridge), 1869, pp. 392, 393, pl. xiii, figs. 76-80, ♂ ♀ from Ceylon.

L. argentina (van Hasselt), 1882, p. 34, pl. ii, fig. 5, ♀ from Sumatra; (Thorell), 1889-90, pp. 199-200, ♀ from Sumatra; (Workman), 1896, pl. liv, ♀

L. argentina var. *nigriceps* (Thorell), 1890a, pp. 297-298, ♀ (? adult) from Penang.

L. auro-cincta (Thorell), 1887, pp. 418-422, ♂ ♀ from Celebes.

L. beata (Pocock), 1901, p. 481, ♀ from Shillong (Assam).

L. celebesiana (Walckenaer), 1837, pp. 222-223, nec Thorell, Workman, Pocock, etc. (see Simon, 1906).

L. culta (Cambridge), 1869, pp. 390-392, pl. xiii, figs. 69-75, ♂ ♀ from Ceylon.

L. decorata (Blackwall), 1864, pp. 44, 45, ♀ from East-India; (Cambridge), 1869, pp. 389, 390, pl. xiii, figs. 61-68, ♂ ♀ from Ceylon; Simon, 1906, pp. 282, 3, ♀ from Pondichery and Mahè.

L. ditissima (Thorell), 1887, pp. 143-146, ♀ from Bhamo (Burma).

L. elegans (Thorell), 1877, pp. 416-418, ♀ from Celebes; 1895,

pp. 156-159, ♂ ♀ from Tharrawady and Rangoon (Burma); (Workman), 1896, pl. xxii, ♀ from Singapore.

L. emertoni (Thorell), 1890 a, pp. 22-24, ♀ from Nias.

L. fastigata (Simon), 1877, pp. 79, 80, ♀ from the Philippines.

L. fastuosa (Thorell), 1877, pp. 413-416, ♀ from Kandari (Celebes).

L. fibulata (Thorell), 1892, p. 16, ♀ from Singapore; (Workman), 1896, pl. liii, ♀

L. gemmea (van Hasselt), 1892, p. 26, pl. ii, fig. 4, ♀ from Sumatra; (Thorell), 1889-90, pp. 206, 207, ♀ from Sumatra; (Workman), 1896, pl. lvi, ♀

L. granulata (Walckenaer), 1837, p. 222, ♀ from New Guinea; (Thorell), 1889-90, pp. 198, 199, ♀ from Celebes, etc.

L. hasseltii (Thorell), 1889-90, pp. 194-196, ♀ from Sumatra.

L. lamperti. Strand, 1907, p. 157, fig. 8, from Ceylon.

L. leprosa (Thorell), 1895, pp. 133-5, ♀ from Tharrawaddy (Burma).

L. macrochaera, with var. *tenasserimensis* (Thorell), 1895, p. 152, ♀ from Tenasserim.

L. nicobarica (Thorell), 1891, pp. 44-46.

L. nigrotrivittata (Doleschall), 1859, p. 33, pl. xi, fig. 5, ♀ from Java.

L. pumila (Thorell), 1877, pp. 429-432, ♀ from Celebes; also recorded from Sumatra.

L. pusilla (Thorell), 1878, pp. 97-99, ♀ from Amboina; also recorded from Table Island.

L. quadriasciata (Thorell), 1890 a, pp. 18-21, ♂ from Penang, ♀ from Sumatra.

L. rubrotrivittata, Simon, 1906, p. 307, ♀ from the Lower Himalayas.

L. scalaris (Thorell), 1889-90, pp. 200-204, ♂ ♀ from Sumatra.

L. sexpustulata, Simon, 1906, pp. 307-8, ♀ from the Lower Himalayas.

L. stictopyga (Thorell), 1889-90, pp. 204-206, ♀ from Sumatra.

L. superba (Thorell), 1890 a, pp. 15-18, ♀ from Nias.

L. tredecim-guttata (Simon), 1877, pp. 80, 81, ♀ from the Philippines.

L. tessellata (Thorell), 1887, pp. 135-138, ♀ from Shwegoomyo (Burma); 1895, pp. 155, 156, ♂ ♀ from Tenasserim.

L. tristicta (Thorell), 1891, pp. 46, 47.

L. ventralis (Thorell), 1877, pp. 423-427, ♂ ♀ from Celebes; (Workman), 1896, pl. 1v, ♀ from Singapore.

L. vibrabunda (Simon), 1901 b, p. 345, from Java.

The species in the collection before me may be distinguished from each other as follows:—

1 { Carapace with a broad median brown band, or generally infuscate; abdomen in spirit (said to be greenish in life) brownish, finely speckled with silver; anterior median eyes unusually prominent, especially in the male; palpal organ of male dark brown *L. ventralis* p. 452.

- 1 Carapace uniformly yellowish; abdomen silvery, especially in the female, with or without greyish or black markings; orange or yellow pigment often extensively present in living or freshly preserved specimens ... 2.
- 2 Tibia of fourth leg of female not plumose; palpal organ of male smaller and paler, often yellowish... 3.
- 2 Tibia of fourth leg of female plumose; palpal organ of male dark brown and very large ... 6.
- Black markings (apart from more or less obsolete mid-dorsal line) confined to a pair of spots beside the spinnerettes and two short rows (often absent) of spots on the posterior part of the dorsal surface, coalescing in a conspicuous black patch on the postero-dorsal hump, which is not otherwise very prominent (fig. 8a) ...
- Black (or grey) markings linear and more extensive (fig. 8b) ... 4.
- Black mid-dorsal line of abdomen of female approximately uniform in width throughout, neither anterior nor posterior part of abdomen much produced (fig. 8b, c); male with relatively short palps and globular palpal organs with only the inner tarsal apophysis present ... 5.
- Black mid-dorsal line of abdomen of female more or less strongly expanded behind, dorsal portion of either anterior or posterior part of abdomen produced (fig. 8d-g); male with palps very long and slender, tibia not less than three times as long as patella, palpal organ less globular, both inner and outer tarsal apophyses present. Female with posterior end of abdomen conically produced above spinnerettes, dorsal tubercles absent, dorso-lateral silver band more or less distinctly broadened and bifid behind (fig. 8d); abdomen of male much less strongly marked than that of female, oblique stripes absent ... 5.
- Female with anterior end of abdomen produced above carapace, three pairs of more or less distinct dorsal tubercles present in anterior part of abdomen, all silver bands tapered and divergent behind (fig. 8g); abdomen of male as strongly marked as that of female, oblique black stripes present between the longitudinal ones dorsally ... 6.
- Abdomen of female not projecting far forwards above carapace; male moderately large with more or less parallel-sided abdomen, its chelicerae without strong spines ... 6.
- Adomen of female projecting far forwards above carapace; male minute with more or less spherical abdomen and anterior surface of chelicerae thickly covered with large black spines ... 6.
- L. culta* p. 453.
- L. celebesiana* p. 454.
- L. decorata* p. 454.
- L. bengalensis* p. 455.
- L. tessellata* p. 455.
- L. fastigata* p. 456.

Leucauge ventralis (Thorell)

Meta ventralis, Thorell, 1877, pp. 423-427.

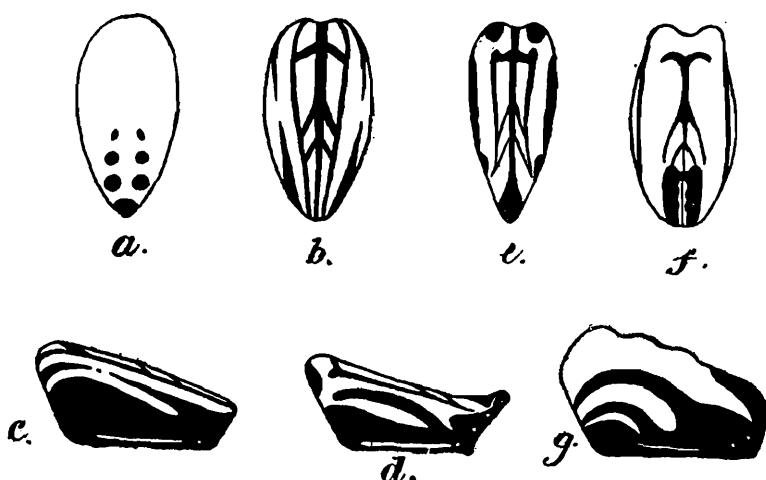
Argyropeira ventralis, Workman, 1896, pl. lv.

Argyropeira ventralis, Pocock, 1900, pp. 216, 217.

Localities.—Nirodumunai in the Trincomalee District (σ) and Kandy (φ) in Ceylon; Trichur, 0-300 ft. (σ φ), Chalakudi (juv.), Forest Tramway, 0-300 ft. (σ φ), and Parambikulam, 1700-3200 ft. in Cochin State, South India; Tollygunge near Calcutta in Bengal (φ).

This species, as already recorded by Sherriffs (1919, p. 233), rests with its legs stretched out on a twig beside its web. In this

it differs from all other species of the genus known to me, and resembles *Tetragnatha*. It further differs from all other species of *Leucauge* known to me in its dull colouration, more resembling that of *Orsinome*, and from all except the female of *L. bengalensis* in having the anterior median eyes much larger than the rest. From *L. bengalensis* it differs in that these eyes are equally large in both sexes, instead of being normal in the male. The trochanter and femur of the palps of the male are very long and slender, the former about half as long as the latter. The patella and tibia are short and stout, together shorter than the trochanter. The patella is scarcely any broader than it is long. The tibia is about twice as long as the patella and is thickened distally.



TEXT-FIG. 8.

- a.—*Leucauge culta* ♀ abdomen from above.
- b.—*Leucauge celebesiana* ♀ abdomen from above.
- c.— " " " ♀, abdomen from the left side.
- d.—*Leucauge decorata* ♀ " " " "
- e.— " " " ♀ abdomen from above. "
- f.—*Leucauge bengalensis* ♀ " " " "
- g.— " " " ♀, abdomen from the left side.

There is the usual stout hook-like inner tarsal apophysis and in addition a stout and highly curved spiniform outer apophysis.

Leucauge culta (Cambridge).

Fig. 8a.

Tetragnatha culta, Cambridge, 1869, pp. 390–392, pl. xiii, figs. 69–75.
Leucauge sexpustulata, Simon, 1906, pp. 307, 308.

Originally described by Pickard-Cambridge from Ceylon and subsequently under another name by Simon from the lower levels of the Himalayas, where I have found it very abundant among low foliage during the rains and whence it is represented in the collection before me from Sureil, 5000 ft.; near Sureil, 6000 ft.; Soom, 4000–5000 ft.; Sitong, ca. 3500 ft.; Gopaldhara; Pashok, ca. 2000 and 3500 ft.—all in the Darjiling District. The Indian

Museum also possesses two specimens from Ceylon, a male from Pattipola and a female from Peradeniya.

The male resembles the female in colour, but is somewhat smaller, with relatively longer legs and narrower carapace. The palpi are of moderate length, the tibia is somewhat stouter than the patella, especially distally, but is about equal to it in length; the patella and tibia together are scarcely half as long as the femur. The palpal organ is more or less globular in form, yellowish in colour (in spirit) with both the inner and outer apophyses well developed, the former larger than the latter, both strongly curved. The adult male is further distinguished by the presence of a large downwardly directed tooth in the middle of the anterior surface of the basal joint of the chelicerae.

Leucauge celebesiana (Walckenaer).

Fig. 8b, c.

Tetragnatha celebesiana Walckenaer, 1837, p. 222.

Epeira nigro-trivittata, Doleschall, 1859, p. 39, pl. xi, fig. 5.

Meta decorata, Koch, 1872, p. 14, pl. xi, fig. 5.

Meta nigro-trivittata, Thorell, 1881, pp. 126, 127.

Localities.—Sevook, 1000 ft.; Tindharia; Singla, 1500 ft.; Gopaldhara; Ghumti, 1500–5000 ft.; Kurseong, 4700–5000 ft., Darjiling, 6000–7000 ft.; Darjiling to Soom, 7000–5000 ft.; Soom, 4000–5000 ft.; Lebong, 5500–6000 ft.; Pashok, 3500; 4500, 5000 and 5500 ft.; Kalimpong, 2000–4500 ft.; Monghoo, ca. 3000 ft.; Sureil, 5000 ft.—all in the Darjiling District of the E. Himalayas, where it is very abundant among herbage during the rains. Also one specimen from the Garo Hills and one each from Shillong and Cherrapunji (Khasi Hills) in Assam.

Concerning the synonymy and distinctive features of this species see under *L. decorata*, below.

Leucauge decorata (Blackwall).

Fig. 8d, e.

Tetragnatha decorata, Blackwall, 1864, pp. 44, 45.

Nephila angustata, Stoliczka, 1869, pp. 241, 242, pl. xx, fig. 7.

Tetragnatha decorata, Cambridge, 1869, pp. 389, 390, pl. xiii, figs. 61–68.

Meta celebesiana, Thorell (nec Walckenaer) 1877, pp. 422, 423; 1881, pp. 126, 127.

Argyropeira celebesiana, Workman, 1896, pl. lii.

Argyropeira celebesiana, Pocock, 1900, p. 216.

Leucauge decorata, Simon, 1906, pp. 282, 283.

Localities.—Colombo and Peradeniya in Ceylon; Trichur, Chalakudi and Parambikulam (1700–3200 ft.) in Cochin; Vercaud, Shevaroy Hills; Bangalore, ca. 3000 ft., Mysore; Coonoor, ca. 5700–6000 ft., Nilgiris; Red Hills, Chingleput District, Madras; Rawal Pindi, Panjab; Barkul, 0–1000 ft., Orissa; Dehra Dun, W. Himalayas; Katihar and Kierpur (Purneah Dist.), Siripur (Saran Dist.), Calcutta and Serampore in Bengal; Darjiling ca. 7000 ft.;

Darjiling to Soom, 7000–5000 ft.; Soom, 3000–3500 ft.; Gopaldhara, Lebong, 5500–6000 ft.; Pashok, 3500 and 5000 ft.; Kalimpong, 2000–4500 ft. and Labdah, 3000 ft.—all in the Darjiling District of the E. Himalayas; Shillong and Sonarpur in Assam; Maymyo in Burma. This species is very common round Calcutta among long grass and low bushes, especially over water during the rains.

Simon (*loc. cit.*) has pointed out that the true *L. celebesiana* of Walckenaer is common throughout Malaysia and part of Australia, and that Blackwall's *nigrotrivittata* is identical with it, both being distinct from the Indian *decorata*. *L. decorata* is the species distinguished by Thorell (*loc. cit.*) from *nigrotrivittata* under the erroneous name *celebesiana*, an error in which he has been followed by Pocock in the "Fauna."

Females of *L. decorata* are somewhat smaller and slenderer than those of *L. celebesiana*, with the posterior end of the abdomen produced above the spinnerettes into a more acutely angular process. The markings on the abdomen, moreover, are usually somewhat better defined than in *L. celebesiana*, and the dorso-lateral silver band is bifid instead of simple behind.

In the male the inner tarsal apophysis of the palp is present in *L. decorata* and absent in *L. celebesiana*, and the palps as a whole are much more slender in the former than in the latter, the tibia—though varying greatly in different specimens—being not less than three times as long as the patella, whereas it is barely twice as long in *L. celebesiana*.

Leucauge bengalensis, sp. nov.

Fig. 8f, g.

Localities.—Calcutta and its suburb Maniktolla, also Serampore on the Hughli a few miles north of Calcutta.

The female resembles *L. argentata* (Camb.) so closely that I took it to be identical with that species until I had examined the male. I can find no characters distinguishing the female from those mentioned in the description of *L. argentata*; but in this description there is no mention of the sizes of the eyes. In *L. bengalensis* the anterior medians are much larger than any of the others, so much so that I think the fact must have been noted by Cambridge in his description of *L. argentata* if it had existed there.

The male, however, differs greatly from that of *L. argentata*, both the palps and abdomen being very slender. In this it resembles *L. decorata*, except that the abdomen is perhaps a little longer and narrower, and is strongly marked with silver and black, much as in the female.

Leucauge tessellata (Thorell).

Argyropeira tessellata, Thorell, 1887, pp. 135–138.

Argyropeira tessellata, Pocock, 1900, p. 216.

Localities.—Forest Tramway, 29–30th mile, 1600 ft. and Parambikulam, 1700–3200 ft., Cochin, Pollibetta, Coorg; Ghumti,

1500-5000 ft., Singla, 1500 ft., Gopaldhara, Soom, 4000-5000 ft., Pashok at various altitudes from 2000-4000 ft., Kalimpong, 600-4500 ft., and Argarra above Teesta nr. Kalimpong, 1000 ft., all in the Darjiling District; and above Tura (Garo Hills), 3500-3900 ft., Sonarpur, and the Assam-Bhutan Frontier (Darrang District) in Assam.

This species is often found in the Darjiling District during the rains together with *L. celebesiana*, which it resembles in general size, form and colour. The female may, however, readily be distinguished from that of this and all other species described above by the dense and somewhat long black hair covering the distal two-thirds of the tibiae of the fourth pair of legs. The male can be distinguished by its somewhat more prominent eyes and its large and dark coloured palpal organs armed with both inner and outer tarsal apophyses.

Leucauge fastigata (Simon).

Argyropeira fastigata, Simon, 1877 (July), p. 79, pl. iii, fig. 10.

Meta elegans, Thorell, 1877 (Oct.-Dec.), *Ann. Mus. Civ. Genova* X, pp. 416-418; 1895, pp. 156-159.

Argyropeira fastigata, Pocock, 1900, p. 216.

Localities.—Peradeniya in Ceylon; Trichur, 0-300 ft.; Forest Tramway, 10th-14th mile, 0-300 ft., and Parambikulam, 1700-3200 ft. in Cochin; Barkuda Island (Chilka Lake) in Ganjam; Hardwar and Saharanpur in the United Provinces, Tavoy and Arakan in Burma.

The webs of this species are mostly spread more or less horizontally in somewhat shady spaces among bushes or under trees. The webs are large, and are often attached to their supports by strands extending for a considerable distance. They are usually situated about on a level with one's eyes which makes them somewhat difficult to detect and I have frequently walked right into them without seeing them, even when searching for them. Males are very difficult to find, as both they and their webs are quite small, and they do not seem to associate themselves closely with females, though they live in similar situations.

The female resembles that of *L. tessellata* in having the hind tibiae clothed with long thick black hair, but differs in having the anterior end of the abdomen very strongly produced above the carapace. The male differs from those of all other species of the genus known to me, except *L. ventralis* and *L. tessellata*, in having large globular palpal organs of a very dark colour. From these two species it differs in its minute size (total length of body about 2 mm.), rotund abdomen and intensely spiny chelicerae. Both the inner and outer tarsal apophyses are present on the palps.

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